

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended). A subsea well construction, comprising:

a casing string disposed in a subsea well;

a production string disposed in the casing string;

an alternative path conduit disposed exterior to the casing string;

the alternative path conduit passing through a subsea wellhead; and

at least one sensor comprising an optical fiber deployed in the alternative path conduit,

the at least one sensor adapted to measure a parameter of interest.

Claim 2 (Original). The construction of claim 1, wherein the alternative path conduit is proximate to the casing string.

Claim 3 (Canceled).

Claim 4 (Previously presented). The construction of claim 1, wherein the alternative path conduit is cemented in place.

Claim 5 (Original). The construction of claim 1, wherein the parameter of interest is one of temperature, distributed temperature, pressure, distributed pressure, acoustic energy, electric current, magnetic field, electric field, flow, chemical properties, or a combination thereof.

Claim 6 (Canceled).

Claim 7 (Currently amended). The construction of claim 61, wherein the optical fiber is deployed in the alternative path conduit by use of frictional fluid force.

Claim 8 (Currently amended). The construction of claim 61, wherein the at least one sensor comprises a distributed temperature sensor of which the optical fiber is a part thereof.

Claim 9 (Original). The construction of claim 8, wherein the distributed temperature sensor measures the thermal profile of at least part of the subsea well.

Claim 10 (Original). The construction of claim 9, wherein the distributed temperature sensor utilizes optical time domain reflectometry to measure the thermal profile.

Claim 11 (Original). The construction of claim 9, wherein the thermal profile is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves.

Claim 12 (Currently amended). The construction of claim 61, wherein the optical fiber is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves.

Claim 13 (Currently amended). The construction of claim 61, wherein the at least one sensor comprises at least two optical fibers.

Claim 14 (Original). The construction of claim 13, wherein the at least two optical fibers comprise a multimode optical fiber and a single mode optical fiber.

Claim 15 (Currently amended). A subsea well construction, comprising:
a casing string disposed in a subsea well;
a production string disposed in the casing string;
an alternative path conduit disposed exterior to the casing string;
the alternative path conduit passing through a subsea wellhead; and
at least one sensor deployed in the alternative path conduit, the at least one sensor adapted to measure a parameter of interest ~~The construction of claim 1~~, wherein the at least one sensor is included on an optical fiber disposed in the alternative path conduit.

Claim 16 (Currently amended). A subsea well construction, comprising:
a casing string disposed in a subsea well;
a production string disposed in the casing string;
an alternative path conduit disposed exterior to the casing string;
the alternative path conduit passing through a subsea wellhead; and
at least one sensor deployed in the alternative path conduit, the at least one sensor adapted to measure a parameter of interest ~~The construction of claim 1~~, wherein the at least one sensor is a fiber optic sensor.

Claim 17 (Original). The construction of claim 1, wherein the at least one sensor is an electrical sensor.

Claim 18 (Currently amended). A subsea well construction, comprising:

a casing string disposed in a subsea well;

a production string disposed in the casing string;

an alternative path conduit disposed exterior to the casing string;

the alternative path conduit passing through a subsea wellhead; and

at least one sensor deployed in the alternative path conduit, the at least one sensor adapted to measure a parameter of interest; and ~~The construction of claim 1,~~

wherein the alternative path conduit has a u-shape.

Claim 19 (Currently amended). A method to obtain information from a subsea well, comprising:

deploying a casing string in a subsea well;

disposing a production string in the casing string;

locating an alternative path conduit exterior to the casing string;

passing the alternative path conduit through a subsea wellhead;

deploying at least one sensor comprising and optical fiber in the alternative path conduit;

and

measuring a parameter of interest with the at least one sensor.

Claim 20 (Previously presented). The method of claim 19, wherein the locating step comprises locating the alternative path conduit proximate to the casing string.

Claim 21 (Canceled).

Claim 22 (Previously presented). The method of claim 19, further comprising cementing the alternative path conduit in place.

Claim 23 (Previously presented). The method of claim 19, wherein the parameter of interest is one of temperature, distributed temperature, pressure, distributed pressure, acoustic energy, electric current, magnetic field, electric field, flow, chemical properties, or a combination thereof.

Claim 24 (Canceled).

Claim 25 (Currently amended). The method of claim ~~24~~19, wherein the deploying at least one sensor step comprises deployed the optical fiber in the alternative path conduit by use of frictional fluid force.

Claim 26 (Currently amended). The method of claim ~~24~~19, wherein the at least one sensor comprises a distributed temperature sensor of which the optical fiber is a part thereof.

Claim 27 (Original). The method of claim 26, wherein the measuring step comprises measuring the thermal profile of at least part of the subsea well by use of the distributed temperature sensor.

Claim 28 (Original). The method of claim 27, wherein the measuring step comprises utilizing optical time domain reflectometry to measure the thermal profile.

Claim 29 (Original). The method of claim 27, wherein the thermal profile is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves.

Claim 30 (Currently amended). The method of claim ~~24~~19, wherein the optical fiber is used for one of providing inflow conformance, monitoring well production, monitoring well integrity, detecting leaks in the casing string or production tubing, or monitoring of gas lift valves.

Claim 31 (Currently amended). The method of claim ~~24~~19, wherein the at least one sensor comprises at least two optical fibers.

Claim 32 (Original). The method of claim 31, wherein the at least two optical fibers comprise a multimode optical fiber and a single mode optical fiber.

Claim 33 (Currently amended). A method to obtain information from a subsea well, comprising:

deploying a casing string in a subsea well;

disposing a production string in the casing string;

locating an alternative path conduit exterior to the casing string;

passing the alternative path conduit through a subsea wellhead;

deploying at least one sensor in the alternative path conduit ~~The method of claim 19,~~

wherein the at least one sensor is included on an optical fiber disposed in the alternative path conduit; and

measuring a parameter of interest with the at least one sensor.

Claim 34 (Currently amended). A method to obtain information from a subsea well, comprising:

deploying a casing string in a subsea well;

disposing a production string in the casing string;

locating an alternative path conduit exterior to the casing string;

passing the alternative path conduit through a subsea wellhead;

deploying ~~The method of claim 19, wherein the~~ at least one sensor is a fiber optic sensor
in the alternative path conduit; and

measuring a parameter of interest with the at least one sensor.

Claim 35 (Original). The method of claim 19, wherein the at least one sensor is an electrical sensor.

Claim 36 (Currently amended). A method to obtain information from a subsea well, comprising:

deploying a casing string in a subsea well;

disposing a production string in the casing string;

locating an alternative path conduit exterior to the casing string ~~The method of claim 19,~~

wherein the alternative path conduit has a u-shape;

passing the alternative path conduit through a subsea wellhead;

deploying at least one sensor in the alternative path conduit; and

measuring a parameter of interest with the at least one sensor.